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The effects on agrarian contracts of a governmental intervention into bonded labor in the western terai of Nepal

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by

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Abstract: We study an effective intervention into a specific form of bonded labor. The intervention led to a shift in agrarian contracts, from bonded labor to sharecropping. By comparing the pre- and post-liberation contracts we evaluate theoretical models of agrarian contracts. We suggest three mechanisms that jointly explain why landlords offered bonded labor contracts pre-liberation. One mechanism we apply to define bonded labor in contrast to tied labor. The mechanism, where the outside option as casual labor is endogenously determined by the choice of long-term contract, implies a trade-off for the landlord between efficiency and redistribution of surplus.

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1. Introduction

Agrarian contracts regulate production and distribution of surplus between rural households. With 66% of the population in a developing country like Nepal still depending on agriculture, according to the census of 2001, it is important to understand the distributive and productive implications of agrarian contracts. The contracts will tend to reflect a trade-off between different concerns. A sharecropping contract may, for example, represent a trade-off between the workers' incentive to shirk, which is counteracted by making the payment dependent on the production, and full insurance, which requires an income for the workers that is independent of production. In this case, the sharecropping contract might be constrained Pareto-efficient, subject to the worker's private information. Similarly, a long-term labor contract may be a Pareto-efficient contract between a landlord who needs labor for particular types of work during the peak season, and workers who would like to smooth their income between seasons.

We will look into a particular type of long-term labor contract, but in contrast to the dominating view that most agrarian contracts are constrained Pareto-efficient, we will argue that this contract was not Pareto-efficient. The bonded labor, or *kamaiya*, contract of the western plains of Nepal probably maximized the landlords' payoff rather than total surplus, and no credible side-payments were available. Based on our empirical findings, we provide a new definition of bonded labor as a contract that by its pure existence brings down the outside option of the laborers. We will argue that an effective intervention into bonded labor must establish a credible and exogenous outside option, which, to our mind, is what happened in Nepal in the year 2000. The intervention led to a shift to sharecropping, which appears to be Pareto-efficient, but it probably reduced the landlords' payoff.

We argue that even though a sharecropping contract may be constrained Pareto-efficient, the landlord can be even better off with a bonded labor contract, as long as the payment is sufficiently low. We will identify a set of explanations for why the workers accept the low pay, applying a simple model. The model is based on detailed information on a particular form of bonded labor, as well as information on the intervention and the post-intervention contracts. The model explains the choice of contracts pre- and post-liberation, and why the ban on bonded labor was effective. Applying the model we also argue that the ban led to a Pareto-efficient contract. The analysis is based on our interviews with ex-bonded laborers.

The permanent contract that we study in Nepal is denoted as bonded labor, and is a relatively inferior contract. The *kamaiyas* of the western plains of Nepal had annual contracts that were negotiated every year, and it appears that the majority changed landlords every 1-3 years. Although this may indicate that the bond was not so strong, the *kamaiya* contract still appears to have been quite exploitative, the husband had to work 12 hours a day year round, and in many cases the wife had to work as well during the peak season, and all this for a low and normally fixed pay. We will discuss why the landlords had the leverage to implement such an inferior contract, and how the government counteracted the leverage and made the liberation effective.

In section 2 we present theories of permanent labor contracts, and point out some gaps in the literature. In section 3 we present a simple model that fills the gaps. Section 4 presents empirical evidence that supports the model, while section 5 concludes.

2. Theories of permanent labor contracts

The simplest contract between a landlord and his employees is a daily contract where the worker receives a fixed pay for a certain amount of work, which can be measured in hours, implying a

daily wage, or as a quantity, leading to a piece-rate. We know that a *piece-rate* contract may solve problems of *moral hazard* when the quality of the work *can be monitored*. However, the quality of the work is *not always easily monitored*, and in that case the payment can preferably be made dependent on the final output, as in a *fixed rent* contract. With such a contract the worker will bear all risk, and may require a risk premium to accept an offer from the landlord. The landlord can *avoid paying the risk premium* by offering a fixed payment every day throughout the year as in a *permanent labor* contract. But in that case, the problem of monitoring again arises. As Stiglitz (1974) first demonstrated, a risk-sharing contract, such as *sharecropping*, will constitute a compromise between *full insurance and work incentives*.

Irrespective of whether the landlord or the tenants run the farm, they will need flexibility when it comes to labor inputs due to fluctuating weather conditions. Lack of labor may be a constraint for particular tasks during the peak season. Bardhan (1983) demonstrated this *additional motive* for the landlords to offer *permanent labor* contracts to ensure that they have *simple access to workers* during the peak periods. Still, it will not be optimal to have permanent laborers available for all peaks in labor demand, and there will normally be a *residual casual labor* market in most villages. Depending on the task, casual labor will be paid per day, or by a piece-rate, as discussed above.

As different contracts may exist at the same time within a village, we expect the terms from the workers' point of view to be relatively equivalent. Complete equivalence would require full information on the landlord's hand when he makes his offers, which is not realistic. So, we would expect some surplus for the workers as they choose the most attractive alternative. Still, we expect the landlord to be relatively well informed about the local population, and thus be able to make offers that are relatively equivalent, such that the individual specific surplus will be limited. The landlords may also be able to design the contracts such that the workers reveal

additional information about their type by their choice of contract.[1] In that case, the most effective workers may have an additional information rent in equilibrium, and we expect them to select the sharecropping contract, as effective work pays better with that contract. However, we will keep our theoretical model simple when it comes to risk and information, and *only allow for moral hazard*. We also assume homogenous workers, and as a result, all *workers will be indifferent between the different contracts* in equilibrium.

This far we have explained permanent labor contracts as a response to the workers' need for insurance, and the landlord's need for accessible labor during peak periods. This is the standard explanation for permanent labor contracts in the case of easily monitored labor efforts, see for example section 13.5.4 in Ray (1998), which is now the standard textbook in development economics. We will argue that these explanations are only parts of the picture, and point out a set of other motives for permanent labor contracts that contribute to the very low payments for these workers, and correspondingly high profits for the landlord. The explanations will be motivated by a simple model in section 3, and supported by our empirical findings as reported in section 4. The remaining part of this section gives an introduction to our findings, based on the existing literature.

Initially, we will point to a mechanism that will not be explained, but rather assumed in our model, that is, the first mover advantage of the landlord in a principal-agent model. In the model we assume that the landlord moves first and thus has the advantage of suggesting a contract to the workers. This is the natural choice in models of permanent labor contracts. However, as Bell (1989) discusses, bargaining models, and we may add competitive models, are obvious alternatives to principal-agent models, and the analyst will have to make a choice.

[1] For variations on such screening models see Allen (1985), Hallagan (1978) and Shetty (1988).

Without further theory, economists choose the model they find most realistic for a particular setting, and in villages dominated by bonded labor it appears realistic to apply a principal-agent model. As economists tend to apply principal-agent models to study permanent labor, we also expect that the landlords know that permanent laborers are willing to accept rules of the game where the landlord suggests the contract. Knowing this, the landlords may have a second-order strategy, where a permanent labor contract is preferred to casual labor not only because of the present trade-off between permanent and casual labor contracts, but also because they know that casual laborers will work elsewhere during the lean season, and thus be *exposed to outside options that may improve their future bargaining position.* We will not go into this dynamic game in the present paper.[2] We only assume that the landlord moves first, and the reader may keep in mind that the landlord can have an additional dynamic incentive to offer permanent labor contracts.

Within the model, we add *two motives* for bonded labor contracts that we have not seen in the literature. The *first motive* is related to the problem of moral hazard discussed above that may lead to a low quality labor input, and thus makes permanent labor relatively less attractive since the landlord must expect lower production. However, there is an equilibrium effect that counteracts this disincentive. *The loss in production will normally be shared within the local economy*. As production declines, the landlord will pay the workers less, and in equilibrium they will not only pay the permanent workers less, but also the casual workers will receive less. So, if the landlord offers permanent labor contracts as implicit insurance for the workers, then he knows that the workers may contribute less than sharecroppers, but they also have to accept a lower utility, as their outside option as casual laborers is worse in equilibrium. This finding requires that

[2] Schaffner (1995) has a model along these lines.

the transaction cost structure is such that the outside option for permanent labor is not exogenously determined outside the village.

The *second motive* is related to the literature on interlinked contracts, for an early, but still relevant, introduction to this topic, see Bardhan (1980), as well as literature on interlinked relations, in particular triadic relations as modeled by Basu (1986) and supplemented by Hatlebakk (2002). The general finding in this literature is that contract terms for one transaction are made dependent upon other transactions. The payment in a labor contract may depend on the interest rate paid to the employer, or even, as modeled by Basu, on the interaction with a third agent in another market. If we generalize these findings and apply them to Nepal, we find that permanent labor contracts are linked up with consumption credit, but also quite different benefits such as grassing rights and access to drinking water, see Hatlebakk (2004). We will allow for such benefits in the model, and we shall see that the monetary term will be lower, as a compensation. So, there may not exist a net benefit for the laborer in equilibrium, but the landlord may benefit, since *the costs of providing the benefits may be far below the monetary value of the benefits* from the worker's point of view. This finding is similar to Bhaduri's (1977) description of non-marketable collateral.

To summarize, permanent labor contracts may entail very low payments, due to an implicit insurance premium, compensation for other benefits, as well as the workers' share in equilibrium of the cost of inefficient production. We shall see, in section 3, that even in the case of a major inefficiency, the landlord may benefit from, and thus decide upon, the bonded labor contract. In section 4 we will present the empirical finding that the governmental ban on bonded labor in Nepal led to a shift to sharecropping, and we will argue that this shift indicates that sharecropping was the Pareto-efficient alternative even prior to the government intervention, but that no credible side-payment was available.

3. Model

We apply a simple principal-agent model, where the principal, a landlord, may share the surplus with the agent by way of a sharecropping contract that guarantees work incentives, or he may offer a fixed payment as in a permanent labor contract and thus implicitly charge an insurance premium. The model is a simple version of the incentive-insurance trade-off model in Stiglitz (1974). We add two additional motives for the permanent labor contract that is motivated by our empirical findings. The permanent laborer is tied up with the principal, and will have other benefits from this interaction than from a pure labor relation. These benefits may be interpreted as interlinkages as discussed for example in Bardhan (1980). As with insurance, the costs for the landlord of providing these benefits may be smaller than the monetary equivalent for the agent. So, the landlord may find it profitable to offer a permanent labor contract rather than a sharecropping contract, even though the expected yield may be lower due to a lack of work incentives. Also note that the contract the landlord offers will be Pareto-efficient, that is, the principal maximizes his payoff subject to a fixed reservation utility for the agent. This far, the model is standard, although it combines different strands of the literature. However, we add a third element to the model that introduces a potential inefficiency, and at the same time defines bonded labor as a contract separate from standard permanent (tied or attached) labor contracts.

That is, we assume that the outside option for the agent is not a fixed reservation utility that is exogenously determined, but rather an endogenous alternative that is determined by the wage for casual labor within the local economy. Casual labor is a residual category in our model, and the equilibrium daily wage is endogenously determined. The wage depends on labor demand, which in turn depends on the yield. In the model, the probability of a high yield depends on the

agent's labor effort, which in turn is higher for sharecroppers than for permanent laborers. The endogenous reservation utility makes the model different from standard principal-agent models.[3]

The model defines an extraordinary power of the landlord that enables him to influence the agent's outside option. This, in turn, implies that the landlord may offer a contract that is inferior to sharecropping. We will argue that this exposure to extraordinary power, which results in a contract that gives the agent a payoff that is below the ordinary reservation utility, is a useful definition of bonded labor. Any laborer that is, rather, exposed to an ordinary outside option will not accept the bonded labor contract, while laborers that are bound to choose between the available local contracts are in fact bonded.[4]

Compared to a standard principal-agent model, the new element of our model implies an endogenously determined reduction in the payoff to the permanent laborer, which redistributes income from the laborer to the landlord, and thus may appear as purely redistributive. However, the redistribution is necessarily linked to a shift to a less efficient contract system. The landlord will thus have a trade-off between efficiency and redistribution, where he himself receives the gains from redistribution, and he may decide on the less efficient bonded labor contract whenever this is the most profitable. Note that there is no side-payment available in this game, because any a priori promise from the laborer to accept a payoff inferior to the casual wage in the

[3] A similar model, with endogenous reservation utility, is presented in chapter 10 of Chambers and Quiggin (2000). In that model the landlord bears a cost if he decides to exploit the laborer by way of certain activities (such as political pressure) that reduce their reservation utility. In our model the endogeneity is, in contrast, by way of a market mechanism. So, they study the implications of an endogenous reservation utility for the terms of the sharecropping contract, while in our model the reservation utility changes with the shift from bonded labor to sharecropping.

[4] Note that the model requires a high fixed transaction cost of working permanently outside the local economy, which makes local casual labor the profitable outside option for the bonded laborers. As a consequence, the model is most relevant for relatively isolated villages. Bonded labor as a result of lack of exposure to outside options is discussed by Schaffner (1995), but she models preferences rather than wages as endogenous.

sharecropping equilibrium will not be credible, since he may rather work as a casual laborer at the normal wage whenever the sharecropping alternative is established.

So, compared to a standard permanent labor contract, the redistribution defined by the endogenous outside option is in fact redistributive, and as a consequence, if the standard permanent labor contract is efficient, then the bonded contract will be efficient as well. However, we may also have the case where the sharecropping contract will be chosen in the case of an exogenous reservation utility, while the endogenous outside option implies a cost reduction for the principal that makes it profitable for him to offer a permanent (bonded) labor contract rather than sharecropping. So, the extraordinary power of being able to not only set the contract for the permanent laborers, but also influence their outside option, may make it profitable to offer a Pareto-inefficient contract that we define as bonded labor. We now present the model.

A principal, that is the landlord, owns land, and he may either rent out the land on a sharecropping basis, or hire permanent laborers.[5] Production is stochastic, with two possible outcomes, a high yield y_h, or a low yield y_l. The probability of a high yield depends on the workers' efforts, with p_1 being the probability of a high yield if the workers are diligent, and p_0 being the (lower) probability in the case of lazy workers. We assume that laziness pays off, and the landlord is not able to observe it, so a bonded laborer will always be lazy.

Daily workers constitute the residual category in this economy, and there will always be some of them, and they only work in the peak seasons. To simplify, we assume that the daily wage *w* is independent of the yield, but may depend on the equilibrium contract system, and we will use the sub-script *s* for sharecropping and *b* for bonded labor whenever we need to

[5] There will be only one type of permanent labor in the model, and we use the terms permanent and bonded labor interchangeably. The model is applied to define a specific kind of permanent labor as bonded labor.

distinguish between the two wages. That is, the daily wage may not be the same in the two equilibria, but subject to a specific equilibrium, the wage will not depend on the yield. The amount of work during peak seasons will depend on the yield. In case of a high yield, they will work for l_h days, and in case of a low yield they work for l_l days. So, the fixed wage is only to simplify notation, the income of the casual laborers depends on the yield. We may interpret the fixed wage as a limited insurance, or as a means of avoiding an annual renegotiation of the wage.

A bonded laborer receives *W* for a full year of work. The payment is independent of labor efforts as the landlord knows for sure that the worker will be lazy, and the probability of a high yield y_h will be p_0. In the case of sharecropping, the worker gets a share (normally 50%) of the yield as his income, he will work hard as a result, and the probability of y_h will be p_1.

Now, traditionally a bonded laborer, *kamaiya* in our case, will also be tied to the landlord by other means. He may have a loan, and he may have a house on the landlord's land. The benefits of such contract elements we denote by *B*, which applies only to the permanent workers. A sharecropper or a daily laborer must go to others for loans and housing, and pay the market price. The daily laborers, for example, will tend to be unmarried sons of the *kamaiyas* who still stay in their parents' house. But, when they get married, they may need a loan and a house, which they can get as a part of the *kamaiya* contract.

We thus have two possible equilibria depending on what long-term contract system the landlord decides to offer. The landlord, and we as researchers, may solve his maximization problem backwards. First we identify the worker's optimal choice between a daily contract and the available long-term contract, where the latter is either a permanent labor contract or a sharecropping contract. Then, we identify the landlord's optimal offer subject to the expected

outcome in the second step, where we also take into account that the choice of long-term contract will affect the daily wage.

We shall see, in the empirical section, that most landlords offer the same contract, that is the *kamaiya* contract as long as this is an available option. With more than one landlord in the economy we must imagine that they collude and behave like a single principal. That is, there is no competition that may interrupt the landlords' power, which in this model is determined by the first-mover advantage.

We now look into the worker's choice between being a daily and a permanent worker. In this case we know that the probability of a high yield is p_0. The daily laborer may have the expected utility $EU_d = p_0 u(w l_h) + (1 - p_0)u(w l_l)$, while the permanent worker will have the utility $U_p = u(W, B)$. However, we recall that the daily workers may work elsewhere in the low seasons, and thus get an additional income that we write, depending on the local yield, as x_h and x_l respectively. The utility equivalence for the worker thus becomes

$$p_0 u(w_b l_h + x_h) + (1 - p_0)u(w_b l_l + x_l) = u(W, B). \quad (1)$$

Next, the landlord may alternatively rent out the land to sharecroppers, rather than hiring permanent laborers. A sharecropper may, in turn, have to hire daily labor during the peak season. Now, it is not clear whether a sharecropper will hire more or less labor than the landlord. On one hand a permanent worker may work long hours during the peak season, but on the other hand the sharecropper may work more efficiently. We keep the same amount of work in the model, since it appears that a separate notation will only make the model more complicated without adding insight. But recall that the probability of a high yield, and thus a high demand for labor, is larger

with sharecropping. Above we also simplified the wage setting by assuming that the wage is independent of the yield, but may depend on the contract system. With a higher expected demand, we thus expect a higher uniform wage with sharecropping. As this will follow from a simple market analysis, we do not provide a formal proof, but formulate the finding as Lemma 1.

Lemma 1

The wage for casual labor will be higher with sharecropping than with bonded labor as the permanent contract system.

With sharecropping we do not only have a higher daily wage, $w_s > w_b$, but also the larger probability p_1 of a high yield that replaces p_0 in the expected utility of the daily worker. The expected utility of the sharecropper we write as $EU_s = p_1 u(\pi_h) + (1 - p_1)u(\pi_l)$, where π denotes the profit from the plot they rent.[6] The utility equivalence for the sharecropper now becomes

$$p_1 u(w_s l_h + x_h) + (1 - p_1)u(w_s l_l + x_l) = p_1 u(\pi_h) + (1 - p_1)u(\pi_l). \qquad (2)$$

Although the probability p_1 is the same for the two alternatives represented in equation (2), the difference between the high and low yield outcomes may not be the same. We would expect smaller dispersion for the daily laborers, since they may work elsewhere in case of a low yield. So, if the potential workers have different risk preferences, then we may expect the least risk-

[6] Note that the profit will depend on the yield, the number of sharecroppers that contract with the landlord as well as the wage for daily labor. We assume a normal case, where profit is highest in the high yield case.

averse to end up with the sharecropping alternative in equilibrium. However, in a more realistic model we may specify x_l as uncertain, and the daily workers might be the least risk-averse. Also note that in a more realistic model the sharecropping contract, with a fixed 50% share, is more flexible than it appears. The landlord can easily adjust the payoff for the sharecropper by adjusting the size of the rented land.

From (1) and (2) we may now identify the three explanations, mentioned in section 2, for why we expect the payment *W* to bonded laborers to be low. We write (1) as

$$p_0\, u(W_{bh}) + (1 - p_0)u(W_{bl}) = u(W, B) = u(\hat{W}) \qquad (1')$$

which illustrates two effects. *First*, the cash payment *W* is smaller than the cash equivalent $\hat{W}$ that gives the same utility as the contract (*W, B*). This explanation may represent different varieties of interlinked contracts, as discussed above. *Second*, for any risk-averse agent the cash equivalent $\hat{W}$ will, due to a risk premium, be smaller than the expected income for the casual laborer, $p_0\, W_{bh} + (1 - p_0)(W_{bl})$. Both these explanations may explain the existence of different kinds of permanent (tied or attached) labor contracts, as discussed in section 2.

By comparing the payoff for casual labor in the two equilibria, that is, by comparing the left hand sides of (1) and (2) as we do in (3), we may illustrate the third effect, which we consider as the novelty of our model as formulated in Proposition 1.

$$p_0\, u(w_b\, l_h + x_h) + (1 - p_0)u(w_b\, l_l + x_l) < p_1\, u(w_s\, l_h + x_h) + (1 - p_1)u(w_s\, l_l + x_l) \qquad (3)$$

The inequality is due to the fact that the casual wage is higher in the sharecropping case, as formulated in Lemma 1, and the probability of the high yield is larger. As a result we have Proposition 1.

Proposition 1

The fall-back option of being a casual laborer gives a lower payoff for the laborers in the bonded labor equilibrium than in the sharecropping equilibrium.

We may now summarize the three parts of the *kamaiya* contract that all contribute to the low payment for the *kamaiyas*.

1) There is an equilibrium effect, where the expected utility of the fallback alternative of being a daily laborer is lower for bonded labor than with sharecropping.

2) Even without the equilibrium effect described in 1), risk aversion implies that the fixed monetary equivalent $\hat{W}$ *will be lower than the expected income from sharecropping.*

3) From u(W, B) = u($\hat{W}$*), we know that the actual payment W is smaller than* $\hat{W}$*, because the permanent laborer is compensated by way of the other benefits in B.*

As said, the two latter effects represent contract elements that are discussed in the literature, respectively on insurance and interlinkages. However, the first part, as formulated in Proposition

1, we have not seen described in the relatively limited economic literature on bonded labor.[7] Note that the lower expected utility for the casual laborers drives down the utility also for the bonded laborers in equilibrium. That is, if the landlord is able to implement bonded labor as the only long-term contract, then he is actually manipulating the outside option of the laborers. This is, in our mind, a useful definition of the extraordinary power that is necessary to enforce bonded labor contracts, that is, the ability of a powerful person to influence his trading partners outside option.[8] The triadic model formulated by Basu (1986) is also of this kind, see Hatlebakk (2002). We thus use this characteristic to make a distinction between tied/attached labor and bonded labor, as in the definition below.

Definition 1

Bonded labor is a permanent labor contract where the landlord, by way of offering only this as a permanent contract, also influences the laborers' outside option.

Economists have struggled with finding a useful definition of bonded labor, and the one we suggest here is not only based on theory, but also on our findings during fieldwork among agricultural laborers who were recently released from a contract that most people termed as bonded labor. The definition is also, as said, supported by similar models of extraordinary power, and we feel the definition is reasonably robust. But, as it is a definition, we can only, as we do here, attempt to convince the reader that the definition is useful.

Now we turn to the landlord's optimization problem. We may compare the detailed payoff functions for the two long-term contracts, but this will not add to the analysis. From the summary

[7] But see Chambers and Quiggin, op. cit.
[8] For a discussion of this, and related definitions of power, see Bardhan (2005).

above we know that with a bonded labor contract the landlord benefits from an insurance premium, the relatively low cost of providing the additional benefits in *B*, and the lower casual wage as described in Lemma 1. These cost reductions must be compared to the loss from a lower expected yield. The lower casual wage that is a result of the bonded labor contract implies that sharecropping becomes relatively less attractive, as compared to a standard principal-agent model with an exogenous reservation utility. We thus have Proposition 2.

Proposition 2

The existence of bonded labor makes the sharecropping alternative relatively less attractive for the landlord.

Within our principal-agent model the landlord will thus offer bonded labor contracts as the only long-term contract, that is, whenever this gives the highest profit. But under what circumstances is the model realistic? In particular, the model requires that the outside option for bonded laborers is casual labor within the village. That is, the economic and social transaction costs of working elsewhere are too high. As the local economy develops, or the laborers are exposed to other contract forms, we may expect the fallback option to become exogenously determined outside the local economy, and thus the landlords to lose the extraordinary power that allows them to offer a bonded labor contract as defined in Definition 1. With an exogenous outside option, we are left with contract elements 2) and 3) above as in a standard labor contract. We formulate this conclusion as a corollary.

Corollary 1

Bonded labor will not exist if the laborers have an exogenously determined outside option.

As illustrated by the liberation of the *kamaiyas* in Nepal, a governmental intervention may establish an exogenous outside option that the landlords cannot manipulate. We will discuss the details of this intervention in the next section.

Note that with an exogenous reservation utility, the landlord's decision will be Pareto-efficient, since his payoff is maximized subject to a fixed payoff for the laborers. But, if the landlord's decision affects the outside option for the laborers, as we model here, then he will be in a position where he may trade off efficiency for redistribution of income to himself. That is, sharecropping may be the Pareto-efficient choice for a fixed reservation utility, but with an endogenous reservation utility the landlord may rather choose bonded labor. This result is formulated in Proposition 3. Note that there are no available side-payments, a promise from the laborer to accept a payment below the reservation utility defined for the case of sharecropping would not be credible. That is, after a shift from bonded labor to sharecropping the casual wage has increased, and the laborer would be free to work for this higher wage.

Proposition 3

Bonded labor is the result of a trade-off, for the landlord, between an efficiency loss and a redistribution of surplus from the laborers.

So, in this case a governmental intervention may not only improve the living standards of the laborers, but also economic efficiency.

As an introduction to the empirical section we now summarize a set of predictions from the theoretical analysis that we will investigate in the empirical section.

Hypotheses

1) The kamaiya contracts were inferior to sharecropping.

2) Pre-liberation, the daily wages in the kamaiya villages were lower than in comparable villages.

3) Post-liberation, the daily wages in the ex-kamaiya villages do not differ from comparable villages.

The hypotheses follow directly from the model. We will investigate the first hypothesis by direct comparison of the contract terms. Then, if we assume that villages without *kamaiyas* are in the sharecropping equilibrium, and keep in mind that any permanent contract will be equivalent to the daily contracts within each village, then we can investigate Hypotheses 2 and 3 by comparing daily wages between villages.

4. Empirical evidence

In this section we document the shift from bonded labor to sharecropping that was the result of a governmental intervention into bonded labor in Nepal. We also compare the terms of the two contracts, and we discuss why the intervention was effective.

In July 2000 the government of Nepal banned the *kamaiya* system of bonded labor contracts. The governmental declaration was the result of political pressure and documentation from human rights organizations, see INSEC (1996), Robertson and Mishra (1997) and the references in Table 1 for introductions to the *kamaiya* system prior to the liberation. The

organization BASE was particularly active in the process of liberation, for a personal account see Chaudhary (2000), and also see BASE (2001). In addition, the trade unions, human rights organizations, in particular INSEC, and the major opposition party UML played important roles, see GEFONT (2002). For a good chronology see Gurung (2004). In addition to the literature mentioned here, we conducted six weeks of fieldwork ourselves, interviewing *ex-kamaiyas*, other households in the villages and NGO activists.[9] We also benefited from discussions with Shiva Sharma at the National Labour Academy, who has done extensive research on the *kamaiyas*, see Sharma and Sharma (2002), and references therein.

The liberation turned out to be an effective intervention into agrarian contracts, it was a de facto ban on bonded labor. Within a few days a majority of the bonded laborers left their landlords, and by the end of the annual contract period, almost all had left. Now, one may say that the *kamaiyas* were not bonded laborers, since the contract period was only one year. In the first week of the month of *Magh* the laborers negotiated a new contract, and they quite regularly changed landlord. If they had a loan, the next landlord would give a new loan, which the laborer in turn transferred to the previous landlord to pay of the loan. They also discussed the contract terms, where it appears that the work efforts of the wife and the amount and form of payment for food were the most flexible contract terms. And, they got a better contract if they had specific skills, which could be very particular skills. Also, it appears to be the case that the wife had to work more if they had a loan. Even though the *kamaiyas* changed employer regularly, and the contract terms were negotiated every year, the working hours were long, and it is quite common in Nepal, and among NGOs to term the *kamaiyas* as bonded laborers.

[9] For details on the fieldwork see Chitrakar (2006).

The liberation of the *kamaiyas* was followed up by *other interventions*, they received a plot of land and a house in separate camps, normally by clearing forest. Furthermore, they were not supposed to pay the loan to the landlord, and many did not pay. They were thus uprooted from the power structures within the village, and the landlords no longer had the same leverage, since the *kamaiyas* did not have to pay the loan, and moved away from the village. From our interviews with ex-*kamaiyas*, landlords and activists, it also appears that the landlords were afraid, and asked the *kamaiyas* to leave. In particular it appears that they feared that the 5 *kattha* land that the government had promised the *kamaiyas* would actually be taken from them.[10] There was also a threat of legal punishment for those who kept *kamaiyas*. Furthermore, when the first group of *kamaiyas* received land relatively early, possibly due to pressure from NGOs, the remaining *kamaiyas* followed at the end of the annual contract period.

So we conclude that the intervention was effective, the government, with support from NGOs, was actually able to implement the ban on *kamaiya* contracts. *The relocation, and the allocation of land and a house appear to have counteracted the leverage the landlords had over the kamaiyas*. We will now go into detail on the *kamaiya* contracts and argue, based on the empirical information, that they were inferior to sharecropping. We also compare the contract to daily wage labor, and we report the change in agrarian contracts that have taken place as a result of the liberation.

There was a relatively large variation in the *kamaiya* contracts, and also some variation in the description of the contracts. We will thus present some previous descriptions of the variation in *kamaiya* contracts, as well as our own findings. Table 1 summarizes the contracts reported by different authors (with Nepali terms in brackets).

[10] 5 kattha = 135 x 135 sq.feet = 0.17 ha, which is approximately half the median farm size of Nepal.

The last row summarizes our own findings. The findings are based on 81 interviews with mainly *ex-kamaiyas*, but also some *kamaiya*-hiring landlords and some present-day *kamaiyas*. I intentionally waited with the generalization that is reported here till after the data was entered. This was to prevent late entries being influenced by the early entries. When the raw data had been entered and summarized, I sat down for the first time with my main field assistant and asked about his general impression, which confirmed my findings. His impression was influenced by his own family's experiences as a *kamaiya* landlord.

Table 1 about here

There appears to be an individual variation in the *kamaiya* contracts according to the ability of the *kamaiya*, and thus his outside option. Also, having a loan appears to affect bargaining power, although this finding is far from consistent. The variation seems to be in the amount of work for other family members, and whether they got a plot of land or a fraction of the production, there also appears to be variation in whether they got extra meals. But it appears to be some standard contracts that we summarize below.[11]

1. The kamaiya gets a fixed amount of paddy (e.g. 720kg) + meals, and meals for the wife whenever she is working, which might be every day.

[11] Thanks go to my field assistant Madhab Bhusal, who helped me to understand the confusing variation in the contract terms that were reported to us, as well as in other writings. He grew up in a village where *kamaiya* contracts were common.

2. One 1/4 or more commonly 1/3 of production from 1 - 2 bigha[12] *land + meals.*

3. If only the husband works, then the same fixed amount of paddy (e.g. 720 kg), but meals are replaced by masura, such that he can eat with his family. Masura is a fixed amount of paddy (e.g. 680kg) + appr. 100kg other food items. Note that he gets some time off to go to his house for meals.

Note that *contract no. 2* is not so different from sharecropping when it comes to payment, since the meals compensate for the lower share of the production. However, the main difference is the working hours, as all *kamaiyas* had to work every day, 12 hours per day for the landlord, and the wives had to work, mostly in the peak seasons, and only for food.

My field assistant puts the value of meals at 15 rupees for a full meal, and 8-9 rupees for the afternoon *roti* snack. This is consistent with the difference in daily wages with and without meals. He also said that the *kamaiyas* usually get two full meals and the snack, which gives a value of 38-39 rupees for the meals. With a paddy price of 7 rupees, *contract no. 1* thus gives a daily payment for the husband of approximately 52 rupees. Now, the wife gets only the meals, and women usually eat less, so the value of the female wage we may put at 30 rupees.

Contract no. 3 is most common for single *kamaiyas* who go home to their family for meals, and thus probably work less. If we put the value of the additional 100kg of food items at double that of paddy, then the daily pay becomes 31 rupees. So this *kamaiya* earns the same as a female *kamaiya*. These value estimates are based on present day prices. Now, the prices have not changed much, probably only increasing from 6 to 7 rupees for paddy. Applying this increase

[12] 1 *bigha* = 20 *kattha* = 270 x 270 sq.feet = 0.6773 ha.

also to the meals, then we have payments at the time of liberation in the year 2000 of *27 rupees* for women and single *kamaiyas*, and *46 rupees* for male *kamaiya* where the wife also works.

But the wage for daily labor has increased more than prices. According to NLSS (1996) and NLSS (2004), the median agricultural wage for the five districts where we find *kamaiyas* increased from 50 rupees in 1995/1996 to 80 rupees in 2003/2004. If we assume a linear growth, then we have an estimate for the daily wage of *67 rupees* at the time of liberation. However, this median wage covers all villages in the district, and we expect that the daily wage in the *kamaiya* villages was lower prior to the liberation, in line with our theoretical model. To investigate this issue, we have identified the three villages in the NLSS (1996) dataset that had the largest proportion of *kamaiyas* according to a *kamaiya* census conducted by the Department of Land Reform.[13] The mean wage in NLSS (1996) was 43 rupees for these three villages, which is significantly lower than the mean of 51 rupees in the other villages of western terai. This finding *supports Hypothesis 2* from the theoretical section.

The median for the *kamaiya* villages was 40 rupees. If we assume the same increase here as in all districts, then the estimated median daily wage for these villages at the time of liberation would be 54 rupees. So, it appears that the *kamaiyas* had a lower pay per day than daily laborers at that time. The lower pay was compensated by the security of receiving food every day, but they also had to work hard, compared to daily laborers. So the overall conclusion is that *kamaiyas* were guaranteed a reasonable income every day, but they had to work long hours. Taking into account this trade-off it appears that the empirical findings are consistent with the theoretical model where there is a utility equivalence between being a casual labor and a *kamaiya*.

[13] The number of *kamaiyas* varies between different sources, probably due to revisions of the register. Our data is consistent with Oli (2003).

Since the liberation, the *kamaiyas* have been better off because they received a (small) plot of land with a house. Furthermore, some of them are now being offered sharecropping contracts, quite often in the village where they used to be *kamaiyas*, although not necessarily with the same landlord. Our respondents clearly stated that sharecropping is a better contract because they do not have to work hard for the landlord every day. We thus have some *support for Hypothesis 1*.

However, this finding is less reliable than the support for Hypothesis 2. We have to rely on the *ex-kamaiyas'* comparison of the *kamaiya* contracts to the present sharecropping contracts, with the comparison being blurred by a set of other changes, such as the interventions described and the general increase in income. Still, the long working hours of the *kamaiyas* and the relatively low payments indicate that the judgments of the *ex-kamaiyas* are reliable. During our fieldwork in the *ex-kamaiya* villages we also asked for the present daily wage, and asked people to compared this to neighboring villages, and found no variation in wages, which is a *support for Hypothesis 3*.

To summarize, when we take the working hours into account we conclude that the *kamaiya* contracts were inferior to sharecropping contracts. And, we conclude that the liberation has led to an improvement in the contracts from the workers' point of view. This improvement was made possible by the intervention, through which the landlords lost their relative control of the laborers. The landlords, on the other hand, are probably worse off. They have to pay more for less work, and the value of the house and other benefits that they previously provided to the *kamaiyas* probably cannot compensate the loss. However, as discussed in the theoretical section, there might be a gain in terms of total surplus, since the *kamaiyas* have now turned into sharecroppers, and thus have incentives to work more efficiently.

We have not seen the shift from *kamaiya* contracts to sharecropping contracts documented previously, except for an unpublished report by Gurung (2004). Gurung's team interviewed *ex-kamaiyas* living in camps, and they found a variation in employment strategies, including self- and wage-employment. Among those who rent land, sharecropping is the dominant contract. In line with his findings, everyone we asked told us that the *ex-kamaiyas* are now on sharecropping contracts if they are not daily laborers. The shift also appears to turn up in the agricultural censuses, although the problem with those is the 10-year gap, with the liberation taking place only one year before the second census. Still, the statistics support our observation, see Table 2.

Table 2 about here

The table reports a relative increase in the proportion of total agricultural land that is rented. For example, in Bardiya the rental share has increased from 18.4% to 21.8%, which gives a relative increase of 18.4%. This increase in the rental shares reflects an absolute increase in land rental, while owner-operated farm land has declined. The exception is Dang, where both categories of farm land have increased. However, the year 2001/2002 was the first full post-liberation year, and we do not know whether the increase actually happened during that year. Adding the information from our fieldwork we are still confident that the *kamaiya* contracts were replaced by sharecropping contracts.

5. Conclusions

Economists have a tendency to say that any voluntary contract is beneficial for both parts. In contrast, we have presented a definition of bonded labor where the landlord, by way of offering

bonded labor as the only available long-term contract, is able to influence the laborers' outside option. The laborers will voluntarily accept the contract, but they would be better off if the contract was not available. This kind of power, where the landlord has the leverage to influence the laborer's outside option, is similar to Basu (1986), but the models differ. While Basu introduces a third part that may take an active role in the threat towards the laborers, we introduce a price-taking third part, represented by the casual labor market, which in our model is the alternative to long-term contracts.

Within the model, the government may play a role if it is able to counteract the leverage the landlord has over the laborers. The government may provide the bonded laborers with a credible alternative, that is, an exogenous outside option that the landlord cannot affect. This is what happened in Nepal in July 2000. After political pressure, the government of Nepal effectively ended the landlords' power, and the *kamaiyas* left the landlords in large numbers. The intervention was effective because the ban on bonded labor was supplemented by interventions that counteracted the laborers' tie to the landlord. The finding, that a government intervention is necessary, is similar to Genicot (2002), but she has a different explanation, where a ban on bonded labor leads to new credit options, and by that the workers are better off.

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Table 1. *Kamaiya* contracts

Reference	Who is working?	Payment	Food	Comments
Dhakal et al. (2000)	Only husband (e*k saro kamaiya*)	Fixed pay in the range 9-11 quintals paddy (*bigaha*)	Meals	
	Also wife has to work (b*ukrahi kamaiya*)	1/4 of production (*chaumali*)	8 quintals paddy (*mashaura*)	No difference in pay according to loan (*saunki*).
Sharma (1998)	If wife works she seems to get paid 10-15% of what the husband is paid. She may work less.	Fixed pay in the range 8-12 quintals paddy + 10%-15% of that weight in lentils and other food (*masura*).	Usually also a plot of land for own farming. Variation in whether they get meals.	Most common contract.
	Only husband	Rs 3000-4000	Meals	
	Family	1/4-1/3 of production from 1-2 *bigha* land	Variation in whether they get meals.	
Rankin (1999)	Women and children work sometimes for meals. If full time (*kamlari*), then half pay of husband.	Fixed amount of grain, which depends on the *kamaiya's* abilities.	Meals is *kisan's* house	Work alongside the smallholder *kisan*, with relatively normal hours. This contract is most common for *Rana-Tharu*.
	Women work occasionally (*bukrahi*), or more permanent (*kamlari*), with no extra payment, but some get meals.	Paddy (*bigaha*)	(*Masura*)	This contract with landlords (*jamindar*) is most common for *Dangaura Tharu*.
Our findings	Wife works for meals either full, or part-time. In some cases for a regular (low) wage.	Fixed amount of paddy as *bigaha* (for example 720 kg), or 1/3 of production	680 kg paddy + 100 kg other food items as *masura*, or meals	*Masura* is most common for single *kamaiya*. If 1/3, then meals.

Table 2: Increase in land rental

District	Land rental 1991/1992	Land rental 2001/2002	Relative increase in land rental
Dang	17.3%	17.7%	2.2%
Banke	13.5%	17.0%	26.7%
Bardiya	18.4%	21.8%	18.4%
Kailali	5.5%	7.4%	33.3%
Kanchanpur	3.0%	4.7%	55.7%

Source: Agricultural censuses, Central Bureau of Statistics, Nepal.

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SUMMARY

We study an effective intervention into a specific form of bonded labor. The intervention led to a shift in agrarian contracts, from bonded labor to sharecropping. By comparing the pre- and post-liberation contracts we evaluate theoretical models of agrarian contracts. We suggest three mechanisms that jointly explain why landlords offered bonded labor contracts pre-liberation. One mechanism we apply to define bonded labor in contrast to tied labor. The mechanism, where the outside option as casual labor is endogenously determined by the choice of long-term contract, implies a trade-off for the landlord between efficiency and redistribution of surplus.

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